

Date: Sun, 16 Oct 94 04:30:21 PDT  
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>  
Errors-To: Ham-Homebrew-Errors@UCSD.Edu  
Reply-To: Ham-Homebrew@UCSD.Edu  
Precedence: List  
Subject: Ham-Homebrew Digest V94 #305  
To: Ham-Homebrew

Ham-Homebrew Digest                      Sun, 16 Oct 94                      Volume 94 : Issue    305

Today's Topics:

    Looking for MPF102 replacement (2 msgs)  
        Q: VLF antenna design  
    Screen Voltage Protection Circuit

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>  
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.  
-----

Date: Fri, 14 Oct 1994 21:45:59 GMT  
From: jdc3538@ultb.isc.rit.edu (J.D. Cronin)  
Subject: Looking for MPF102 replacement

I have a few projects in mind that use a MPF-102 for pre-amps on  
2-meters and 440. Are there any newer parts that have better gain  
or less noise? The Motorola RF Device book doesn't list substitutes  
for the MPF102.

73...Jim N2VNO

-----  
Date: 15 Oct 1994 17:47:44 GMT  
From: hskim@ripley.ece.uiuc.edu (Han Kim)  
Subject: Looking for MPF102 replacement

Dana Myers (myers@Cypress.West.Sun.Com) wrote:  
> In article 9971@ultb.isc.rit.edu, jdc3538@ultb.isc.rit.edu (J.D. Cronin)  
writes:

> >  
> >I have a few projects in mind that use a MPF-102 for pre-amps on  
> >2-meters and 440. Are there any newer parts that have better gain  
> >or less noise? The Motorola RF Device book doesn't list substitutes  
> >for the MPF102.

> I'd recommend the J308/309/310 family for 2m/70cm pre-amp use. A J310  
> is certainly superior to an MPF102 in these applications. However, you  
> may need to adjust the circuit to the different specs of the J310 (have  
> a look at the data sheets). A 2N4416 is essentially identical to an  
> MPF102, and may be easier to find.

The data sheet I have says a Siliconix U310 (Is this the same device as J310?) 16dB of common-gate power gain at 105MHz and 11dB at 450MHz. The noise figure is 2.7dB at 450MHz. I think this is certainly better than the MPF102. There is also an improved version of MPF102 (MPF106, I think).

But still, this may not be the best choice for preamp circuits. Usually MOSFETs are superior to J-FETs at higher frequency, and at 440 it would be so difficult to find a cheap J-FET that gives the gain and NF as a MOSFET would. I usually recommend a dual-gate MOSFET for preamps when some people might have a few in their part bin. I think the good old 40673 has been phased out but there are still plenty to choose from, like 3SK40, 3SK45, 3SK48, 3SK51, 3SK72-74, 3N204, 3N211, etc. These in general will give you 20dB or more of gain and 2dB or less of NF in general up to 300MHz. I like 3SK72, 3SK73, or 3SK74 most, because they are rather inexpensive and available in small microdisk package which is easier to work with than T0-18, 72 or 92 package. 3SK72 is mostly used in TV or FM radio, whereas 3SK74 has been found on many ham-gears from Japan. (I think I first saw this first in my old IC-730 front-end mixer.) There is a very good example of a dual-gate MOSFET preamp in recent ARRL handbook.

If you have to buy something new, then I say go for a GaAsFET. There are several types you can get for less than 5 buck a piece. A GaAsFET has much better NF especially at 440. The handbook has several plans on this, too.

Han KB9BQO / HL1AMS

> ---  
> \* Dana H. Myers KK6JQ, DoD#: j | Views expressed here are \*  
> \* (310) 348-6043 | mine and do not necessarily \*  
> \* Dana.Myers@West.Sun.Com | reflect those of my employer \*  
> \* "Antenna waves be burnin' up my radio" -- ZZ Top \*

--  
Han Seok Kim | hskim@uiwpls.ece.uiuc.edu  
Wave Propagation Lab. | (217) 333 - 4406

Univ. of Illinois at Urbana-Champaign | Linux - to die for

-----  
Date: 15 Oct 1994 14:23:39 GMT  
From: vhansen@ipfy.bau-verm.uni-karlsruhe.de (Wolfgang von Hansen)  
Subject: Q: VLF antenna design

Hi everybody!

First of all I want to apologize for my bad english regarding the technical terms--but being a beginner to antenna design implies not knowing all the words correctly.

I need some information on how to build a VLF antenna. It shall receive signals at 10-14kHz with an omnidirectional characteristic. It should also be quite small [ $\leq 1\text{ft}$ ] in size.  
Currently I am thinking of two ferrite bars (?) which are arranged orthogonally. What I need to know is how to calculate the resonant circuit. I also need infos on how to build a simple amplifier and connect the antenna to it. A transformation of the signal to other frequencies is not necessary.

Thaks in advance,

Wolfgang

--  
vhansen@ipf.bau-verm.uni-karlsruhe.de | Gurus use 'cat >a.out' instead of gcc  
float o=0.075,h=1.5,T,r,0,l,I;int \_,L=80,s=3200;main(){for(;s%L||  
(h-=o,T=-2),s;4-(r=0\*0)<(l=I\*I)|++\_==L&&putchar(\*((--s%L?\_<L?--\_  
%6:6:7)+"World! \n"))&&(0=I=1=\_r=0,T+=o/2))0=I\*2\*0+h,I=1+T-r;}

-----  
Date: 15 Oct 1994 14:02:10 -0400  
From: ells22@aol.com (ELLS22)  
Subject: Screen Voltage Protection Circuit

My 4-1000A Amp project is moving forward slooooooly but surely. I need ideas on a sane, simple and safe (for me and the tube) interlock so that screen voltage can't be applied if the plate voltage is not present. It seems to me that I have to sense the 5KV directly, decide that it is or is not there and lock in/out the screen voltage. The circuit also has to react quickly in the event of Plate Voltage failure.

Any ideas would be appreciated. Remember I'm old, still understand 12AU7s, and need all the help I can get.

Thanks  
WA6CWV, Russ Ellsworth, Boise Idaho

-----  
Date: Fri, 14 Oct 1994 16:19:41 GMT  
From: chuck@platinum.com (Chuck Horvat)

References<Cw6wEs.CJH@acsu.buffalo.edu> <36sb2i\$er9@crl.crl.com>,  
<laforest.snowcrest.net-0710940056230001@ppp0.mtshasta.snowcrest.net>  
Subject: Re: Homebrew Antennas for cordless phones

In article <laforest.snowcrest.net-0710940056230001@ppp0.mtshasta.snowcrest.net>  
laforest.snowcrest.net (Dale LaForest) writes:  
>From: laforest.snowcrest.net (Dale LaForest)  
>Subject: Re: Homebrew Antennas for cordless phones  
>Date: 7 Oct 1994 07:59:54 GMT

>Does anyone know if the range of cordless phones can be extended by adding  
>a long wire to the end of the antenna?

>This digital cordless phone uses 900 mhz frequency... and should the  
>antenna be any particular length to optimize its effectiveness?

>I'm wondering because I heard that digital cordless phones might have up  
>to 4 times the range of standard cordless phones...(700' max), ... so I'm  
>wondering if a 1/2 mile range is possible?

>thanks

>Dale LaForest  
>e:mail at

>laforest@snowcrest.net  
>(916)926-5115

-----  
Date: 15 Oct 1994 20:45:43 GMT  
From: rkarlqu@scd.hp.com (Richard Karlquist)

References<19940ct5.120952.5557@qatrix.lonestar.org> <CxJpt7.E2y@eskimo.com>,  
<19940ct12.133106.31404@arri.org>

SuFrom ham-homebrew-relay@ucsd.edu Sun Oct 16 00:43:50 1994

Received: from network.ucsd.edu by ucsd.edu; id AAA14286

sendmail 8.6.9/UCSD-2.2-sun via ESMTP

Sun, 16 Oct 1994 00:43:49 -0700 for <ham-homebrew-digest@ucsd.edu>

Received: from localhost by network.ucsd.edu (8.6.4/UCSDGENERIC.4)

id AAA26243 to ham-homebrew-digest@ucsd.edu; Sun, 16 Oct 1994 00:28:49 -0700  
To: ham-homebrew@ucsd.edu  
Date: Sun, 16 Oct 1994 06:18:23 GMT  
From: wa2ise@netcom.com (Robert Casey)  
Message-ID: <wa2iseCxr5In.6Eo@netcom.com>  
Organization: Netcom Online Communications Services (408-241-9760 login: guest)

References<19940ct08.210603.16886@wb3ffv.wb3ffv.ampr.org>  
<CxFFnv.HCH@srngenprp.sr.hp.com>, <CxL2rA.Ct3@SSD.intel.com>  
Subject: Re: Fractional turns on toroids? Use two (or more) cores...

In article <CxL2rA.Ct3@SSD.intel.com> dermer@ssd.intel.com (Greg Dermer) writes:  
>but you CAN get fractional turns. Though theoretically  
>possible at any frequency, it's practically limited to frequencies where  
>laminated or tape-wound cores are used. Drill a hole through the core and  
>run one turn through it so that that turn only links part of the flux in  
>the core. Voila, a partial turn.

>  
>  
>It's a real drag trying to drill a hole in ferrite, though. ;)  
>

Instead of drilling a hole, use two ferrite cores next to each other.  
Wind the windings thru both cores, and the fractional tap would  
be passed thru the gap between the two toroid cores. maybe try filing  
a notch in both cores to pass the tap.

attempt at an ascii drawing:

```
-----  
      /--\   /--\   |  
--|  -----+|  ----- winding (one turn shown, tap gives 1/2 turn)  
      \--/   \--/   ^  
      ^       |       ^  
    core tap 2nd core
```

-----  
End of Ham-Homebrew Digest V94 #305  
\*\*\*\*\*